**Algorithm 1**

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| **Learning Algorithm: DTL-NN** |
| **Input 1:** Healthy data  **Input 2:** Task labeled data |
| **Output:** DTL-NN model |
| *# offline learning*  ***for k=1:L layers of SSAE*** |
| ***Minimize*** |
| ***End*** |
| *# prior knowledge aided classification*  ***Calculate high-level features for targeted subjects***  ***Supervised learning of softmax regression by optimizing*** |
| ***Fine tuning of the DTL-NN with task data***  ***Return*** |